PATENT SPECIFICATION 814,872

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COMPLETE SPECIFICATION.

Improvements in or relating to a Method of Blanching or Pre-Cooking Peas, Beans and the like and Apparatus for Carrying Out the Method.

We, MITCHELL ENGINEERING LIMITED, a British Company, of 1 Bedford Square, London, W.C.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method for blanching or pre-cooking peas, beans and like products and also to an apparatus for carrying out the method. Whilst the invention is applicable to peas, beans and the like whether dried, fresh or soaked, it will, without any implied restriction thereto, be described with reference to the treatment of peas.

An object of the invention is to provide an improved method and apparatus for carrying out the blanching or pre-cooking of peas which is economical in operation and by means of which the peas may be treated much more rapidly and efficiently than with currently used methods and apparatus.

In our co-pending Application No. 19477/54 (Serial No. 814,871) there is described and claimed a method of blanching or pre-cooking peas or the like which comprises continuously passing dried, fresh or soaked peas into a vessel and through a pre-heated prepared aqueous liquid contained therein at a rate such that the duration for which said peas are immersed in said liquid at the temperature to which said liquid is pre-heated is sufficient to blanch said peas, discharging said peas from the vessel in a stream of liquid passing through a conduit opening into the bottom of the vessel and extending upwardly therefrom, the stream of liquid in the conduit being maintained by the head of liquid in the vessel, the treated peas being subsequently separated from the liquid and the liquid recirculated to the vessel.

In accordance with the present invention a method is provided of blanching or pre-cooking peas or the like which comprises continuously feeding dried, fresh or soaked peas into a vessel, spraying the peas with water to form a surface film thereon, and maintaining the moistened peas at a predetermined temperature for a predetermined time by passing them in counter-current to a circulation of steam to blanch or pre-cook the peas to a required degree, and continuously separating the treated peas from the supernatant liquid, the peas being sprayed with sufficient water to maintain a surface film thereon during the time said peas are maintained at said predetermined temperature.

The peas, moistened by water spray, will normally descend under gravity through a ventilated vessel up which the steam counter-current rises and a separator will be provided at the base of the vessel to separate the drained peas from the supernatant liquid. The liquid from the bottom of the vessel may be used to pre-soak the peas or may be re-circulated to the top. Alternatively, the liquid may be heated in the bottom of the vessel to be converted into steam to pass upwardly in counter-current to the peas. The drained peas will be carried by a suitable conveyor to be further cooked or otherwise treated.

The invention also comprises an apparatus for carrying out the invention comprising a vessel having means to feed peas or the like into the upper end thereof, sprays to moisten

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the peas with water, steam inlets at the lower end of the vessel to provide a steam counter-current, and separating means at or near the lower end of the vessel to separate the peas from the supernatant liquid.

In order that the invention may be clearly understood an embodiment thereof will now be described, by way of example, with reference to the accompanying diagrammatic drawing in which there is shown a section through an apparatus according to the invention.

As shown in the drawing, a vessel in the form of a cylindrical vertical casing 1 is provided with a hopper 2 at the upper end thereof into which a continuous supply of dried, fresh or soaked peas is fed. Sprays 3 direct water on to the peas in the hopper to coat the surface thereof with a film of water. From the hopper the peas pass downwardly through the vessel over a series of perforated baffles. These baffles may be in the form of a series of inverted frusto-conical plates 4 extending inwardly from the sides of the vessel and a series of upright frusto-conical baffles 5 may be arranged alternately thereto centrally of the casing. The inner baffles may be mounted upon a central tube 6 extending the whole length of the casing.

At the lower end of the casing a final inverted perforated conical baffle 7 drains the peas and feeds the peas to a cylindrical outlet duct 8 the end of which is almost closed by a movable conveyor belt.

Control over the stopping and starting and the rate of discharge of the peas and thereby of the time of treatment may be exercised by a valve in the form of a baffle 11 built to be lowered into the discharge duct or raised above it. This valve may be suspended by a control linkage 12 passing through the central tube 6 disposed axially within the casing.

Further control of the rate of discharge may be obtained by regulating the speed of the belt 9 past the outlet duct.

In the space 13 below the lowermost inverted conical perforated baffle 7 are arranged steam inlets 14 from which steam emerges and passes upwardly through the casing in counter-current to the movement of the peas. As water collects in the space 13 at the bottom of the casing surrounding the outlet duct the steam serves to evaporate this water to pass upwardly through the baffle 7. The water level in the space 13 is maintained constant by an overflow pipe 15.

As will be appreciated, the steam and water inlets may be arranged at other points than those indicated or at additional points as desired.

The baffles serve not only to retain the peas in an open and free moving state but also to allow for a considerable expansion thereof as the peas imbibe water.

WHAT WE CLAIM IS:—

1. A method of blanching or pre-cooking peas or the like which comprises continuously feeding dried, fresh or soaked peas into a vessel, spraying the peas with water to form a surface film thereon, and maintaining the moistened peas at a predetermined temperature for a predetermined time by passing them in counter-current to a circulation of steam to blanch or pre-cook the peas to a required degree, and continuously separating the treated peas from the supernatant liquid, the peas being sprayed with sufficient water to maintain a surface film thereon during the time said peas are maintained at said predetermined temperature.

2. A method according to Claim 1 wherein said peas descend under gravity through said vessel.

3. Apparatus for carrying out the method of Claim 1 or 2 comprising a vessel having means to feed peas or the like into the upper end thereof, sprays to moisten the peas with water, steam inlets at the lower end of the vessel to provide a steam counter-current, and separating means at or near the lower end of the vessel to separate the peas from the supernatant liquid.

4. Apparatus according to Claim 3 wherein a system of baffles is provided within the vessel to control the passage of peas therethrough, and to maintain spaces within the vessel to allow for the expansion of peas as they absorb water.

5. Apparatus according to Claim 4 wherein the baffles are perforated.

6. Apparatus according to Claim 4 or 5 wherein the baffles are in the form of a sequence of upright and inverted frusto-conical members arranged alternately within the vessel.

7. Apparatus according to any one of Claims 3 to 6 wherein the peas are finally drained before discharge upon a perforate inverted frusto-conical baffle and the drained peas then pass into an outlet disposed centrally in the baffle.

8. Apparatus according to Claim 7 wherein a valve in said outlet serves to control the discharge rate of treated peas and thereby the duration of treatment of the peas.

9. Apparatus according to Claim 7 or 8 wherein said outlet opens in close proximity to a conveyor belt the rate of movement of which past said outlet serves to provide some control over said discharge rate.

10. Apparatus according to any one of Claims 7 to 9 wherein the space surrounding said outlet contains steam inlets or heat means to evaporate the liquid collecting in said space thereby to provide said steam counter-current.

11. Apparatus according to Claim 10

where an overflow outlet is provided to maintain said liquid level in said space constant.

12. A method of blanching or pre-cooking peas or the like substantially as hereinbefore specifically described.

13. Apparatus for carrying out the method of any one of Claims 1, 2 or 12 substantially as hereinbefore specifically described with reference to the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Improvements in or relating to a Method of Blanching or Pre-Cooking Peas, Beans and the like and Apparatus for Carrying Out the Method.

We, MITCHELL ENGINEERING LIMITED, a British Company, of 1 Bedford Square, London, W.C.1, do hereby declare this invention to be described in the following statement:—

This invention relates to a method for blanching or pre-cooking peas, beans and like products and also to an apparatus for carrying out the method. Whilst the invention is applicable to peas, beans and the like whether dried, fresh or soaked, it will, without any implied restriction thereto, be described with reference to the treatment of peas.

An object of the invention is to provide an improved method and apparatus for carrying out the blanching or pre-cooking of peas which is economical in operation and by means of which the peas may be treated much more rapidly and efficiently than with currently used methods and apparatus.

According to the invention there is provided a method of blanching or pre-cooking peas which comprises continuously feeding dried, fresh or soaked peas into a vessel, spraying the pease with water to form a surface film upon the peas and passing the moistened peas in counter-current to a circulation of steam to maintain the water film upon the peas at a predetermined temperature for a predetermined time to blanch or pre-cook the peas to a desired degree.

The peas, moistened by water spray, will normally descend under gravity through a ventilated vessel up which the steam counter-current rises and a separator will be provided at the base of the vessel to separate the drained peas from the supernatant liquid. The liquid from the bottom of the vessel may be used to pre-soak the peas or may be re-circulated to the top. Alternatively the liquid may be heated in the bottom of the vessel to be converted into steam to pass upwardly in counter-current to the peas. The drained peas will be carried by a suitable conveyor to be further cooked or otherwise treated.

The invention also comprises an apparatus for carrying out the method of the invention comprising a vessel having means to feed peas into the upper end thereof, sprays to moisten the peas with water, steam inlets at the lower end of the vessel to provide a steam counter-current and separating means at or near the lower end of the vessel to separate the peas from the supernatant liquid.

A system of baffles will normally be provided to control the passage of the peas through the vessel and to allow adequate spaces to be maintained within the vessel to allow for the expansion of the peas as they absorb the water. These baffles will normally be perforated and may conveniently be in the form of a sequence of upright and inverted frusto-conical members within the vessel.

Means to control the rate at which peas leave the vessel and thereby the duration of treatment may also be provided. This may comprise a conical valve, adjacent the outlet for the peas, where the peas are finally drained before discharge upon a sloping perforated baffle and thence form a column in an outlet terminating adjacent a conveyor belt. A measure of control of the discharge speed may be obtained by controlling the speed of the conveyor belt.

In order that the invention may be clearly understood one embodiment thereof will now be described by way of example.

EXAMPLE.

A vessel in the form of a cylindrical vertical casing is provided with a hopper at the upper end thereof into which a continuous supply of dried, fresh or soaked peas is fed. Sprays of cold water directed to the peas in the hopper coat the surface thereof with a film of water. From the hopper the peas pass downwardly through the vessel over a series of perforated baffles. These baffles may be in the form of a series of inverted frusto-conical plates extending inwardly from the sides of the vessel and a series of upright frusto-conical baffles may

be arranged alternately thereto centrally of the casing. The inner baffles may be mounted upon a central tube extending the whole length of the casing.

At the lower end of the casing a final inverted conical baffle feeds the peas to a cylindrical outlet duct the end of which is almost closed by a movable conveyor belt.

Control of the rate of discharge of the peas and thereby of the time of treatment may be exercised by a valve in the form of a baffle built to be lowered into the discharge duct or raised above it. This valve may be suspended by a control linkage passing through the central tube disposed axially within the casing.

In the space below the lowermost inverted conical perforated baffle are arranged steam inlets from which steam emerges and passes upwardly through the casing in counter-current to the movement of the peas. As water collects in the space at the bottom of the casing surrounding the outlet duct the steam serves to evaporate this water to pass outwardly through the casing.

The baffles serve not only to retain the peas in an open and free moving state but also to allow for a considerable expansion thereof as the peas imbibe water.

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814,872 COMPLETE SPECIFICATION
1 SHEET

This drawing is a reproduction of the Original on a reduced scale.